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A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

Research and development work at the USAEC's national and other major laboratories will generally increase in volume during the next ten years, a recent Commission report has predicted. The report was prepared for the Joint Congressional Committee on Atomic Energy in response to a JCAE request of last June. The rate of increase will vary, with activities reduced at one or two places. The report shows that the USAEC laboratories now employ some 42,000 people and have an annual operating budget of about $666 million excluding weapon expenditures. The report is being sent by the JCAE to industrial firms, universities and government agencies; comments invited by April 15 will be published later with the report. (Other RESEARCH & DEVELOPMENT NEWS, and details this report, p. 4 this LETTER.)

Nuclear instrumentation for the USAEC's Hallam nuclear power facility, Hallam, Neb., will be designed and manufactured by General Electric Co.'s atomic power equipment department, San Jose, Calif., under subcontract awarded GE by Atomics International division of North American Aviation, prime contractor to supply the nuclear portion of the 75,000 kw sodium-graphite power station. Consumers Public Power District of Nebraska will operate the station on its system; completion is scheduled for 1961. The GE instrumentation will provide nine channels with provision for spare operating channels. (Other CONTRACT NEWS, p. 2 this LETTER.)

Net income of $390,940 in 1959 was an increase of 61% over the preceding year, Victoreen Instrument Co., Cleveland, has now advised shareholders. The company, pioneer U.S. manufacturer of nuclear instruments, has a broad line of electronic devices. Consolidated sales for 1959 were $7,776,761 which was an increase of 43% over the 1958 total of $5,449,340. On the 1,537,961 shares outstanding Dec. 31, 1959 this was a per share earning of 25¢. (Other FINANCIAL NEWS, p. 5 this LETTER.)

Underground drilling program has been started at the Pater copper property of Pronto Uranium Mines in the Elliot Lake area, N. Ontario, marking strong effort of Pronto to expand its mineral output in face of shrinking markets for uranium concentrates. Previous work at Pater had outlined about 1 million tons grading approximately 2.1% copper. The present program will test this mineralized zone to a depth of 400-500 ft. below the 950-ft. level previously reached. Pronto had bought the Pater property last year for 166,666 of its shares. Plans are to alter the Pronto uranium mill, when uranium operations come to an end, to enable it to produce copper concentrate with Pater ore for feed. (Other BUSINESS NEWS, p. 5 this LETTER.)

Nuclear ship Savannah will be maintained and serviced by Todd Shipyard Corp. Firm was selected by Maritime Administration to handle repair and refueling; spare parts storage; and maintenance of decontamination area. This is in addition to maintenance and berthing of the servicing barge N.S.V. Atomic Servant, under construction in Todd's shipyards. (Other MANUFACTURER'S NEWS, p. 3 this LETTER.)

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ATOMIC ENERGY CONTRACT NEWS...

EVALUATION OF UNSOLICITED PROPOSALS TO BE REVISED: Procedures of the USAEC for evaluating unsolicited proposals received from industrial firms for studies of new reactor concepts have been revised. Formerly, they were reviewed by the New Reactor Concepts Board semi-annually, in March and September, although they could be submitted at any time. This Board has now been abolished, and concepts will be reviewed immediately by the appropriate unit within the Commission's division of reactor development. (Twelve proposals were submitted by 10 companies during the September 1, 1959--March 1, 1960 period. The USAEC selected a proposal of American Radiator-Standard Sanitary for continuation of studies to analyze the nuclear and thermal stability of the core of a mercury-cooled breeder reactor. All other proposals for Commission support of suggested projects were rejected.)

CONTRACT EXTENDED: Martin Co., Baltimore, has received a $2,300,000 extension of its contract with the USAEC for work in the field of isotopic power under the Commission's SNAP Program (Systems for Nuclear Auxiliary Power). These are thermocouple devices using the heat produced by the spontaneous decay of a radioisotope. Although Martin's isotopic power units are already in the "hardware" stage, much of the current contract effort of the company's nuclear division involves advanced research and development. The physical and chemical characteristics of radioisotope fuels are being studied, and various types of containment are being analyzed to increase efficiency and power output.

NEWS OUTSIDE THE UNITED STATES...

UNITED KINGDOM: Contract worth £145,000 has been awarded by U. K. Atomic Energy Authority to Mitchell Engineering, Peterborough, for work at Windscale. Included in the contract is civil engineering work, a steam generation plant, oil tank farm and related facilities.....Contract valued at £90,000 has been awarded William Bain & Co., Coatsbridge and London, by the U. K. Atomic Energy Authority. It covers the supply and erection of 1,100 tons of structural steelwork for the main research building, laboratory and control rooms of a new thermal reactor to be built at Culham, Oxfordshire.

The General Electric-Simon Carves Atomic Energy Group and Atomic Power Constructions have terminated their negotiations which, it had been believed, would enable their collaboration on future nuclear reactor systems. In September, 1959, the organizations had announced that an agreement had been reached to collaborate on the design and construction of nuclear power stations in the U. K., and that the two companies would submit joint tenders for Dungeness and further stations in the British nuclear power program.

Construction schedules now indicate that the first of the two reactors at the Berkeley, Gloucestershire, nuclear power station is expected to be in operation during the first quarter of 1961. Reactor No. 2 will be operational by the third quarter of next year, with the net output to the national grid some 275 mw. Associated Electrical Industries-John Thompson Nuclear Energy Company are constructing the station. Mechanical work on the station is about three-quarters finished; the reactor installation is the main job now underway there.

First such plant to become operational in Europe is the newly-opened beryllium machining plant at Coventry of Armstrong Whitworth Aircraft, member of the Hawker Siddeley Group. Armstrong Whitworth propose to produce beryllium components for nuclear reactors. (Specifications call for the use of beryllium as a canning material for fuel elements in the new advanced gas-cooled reactor at Windscale.) Notable are health precautions at this plant: pressure shells supplied with filtered air changed every three minutes, special protective, clothing, self-contained laundry, and showers for personnel. Elaborate laboratory and analytical monitoring is carried on to maintain standards of health safety.

FRANCE: France's nuclear power station EDF-1 has run into construction difficulties which may delay it as much as a year. Main cause of the trouble were the welds on the 4-in. thick steel plates used as the metal shell for the atomic pile. The shell has to resist high pressures of carbon dioxide used as reactor coolant; the welds could not sustain this pressure.

First French pilot plant for deuterium and heavy water production has been started up by Compagnie Francaise de l'Eau Lourde. It was designed by L'Air Liquide in collaboration with the French Atomic Energy Commission and the National Industrial Nitrogen Office. Out put is about 2 metric tons of heavy water per year; studies with it will be scaled up to an industrial unit with capacity of 10 to 15 metric tons per year. French plans for nuclear power stations comtemplate using heavy water as a moderator.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS: New low-cost scintillation counting system, Model MTS-175, is designed especially for using iodine-131 in thyroid counting evaluation. It is offered by this manufacturer as a complete medical uptake "package" and includes a shielded scintillation counter with collimators, scaler and timer, mobile detector stand, phantom neck, and simulated iodine source. -- Atomic Accessories, Inc., Valley Stream, N.Y.

Low cost, high density deuterated titanium accelerator targets are now being produced and marketed by this firm. The material consists of a 1 micron thick titanium coating on a 2 mil stainless steel backing, containing approximately 1 cc of deuterium per sq. in. It is said to be completely stable in normal atmospheres and not appreciably affected by immersion in water or other solvents or by exposure to acid fumes.--Radiation Research Corp., 1114 First Ave., New York, N.Y.

PRODUCT NEWS: An improved scintillation scanner for medical diagnostic work has been developed at Oak Ridge National Laboratory, Oak Ridge, Tenn., and has been in use at Methodist Hospital, Houston, Texas, and at other medical centers in the U.S. Advantages provided by the ORNL-developed device include an improvement in the system by which findings of the detector are visually recorded for interpretation, as well as improvements in the machinery needed to move the detector. In addition, the ORNL technique applies certain principles of scintillation spectrometry which permit electronic rejection of information received from scattered radiation from other areas near the field of view of the counter. The first model, after being in satisfactory service for two years has been superseded by one embodying improvements shown necessary during clinical use. It is now being assembled, and will be available in the public domain in the Fall of this year.

Bantam air sampler offered by Gelman Instrument Co., Chelsea, Michigan, for sampling dusts, radioactive aerosols, etc., has a capacity of 1.5 CFM and is fully portable, weighing 7-lbs. This includes pump, filter holders, flowmeter, valve and motor all of which are combined in a compact package. The company offers it in models for 110 v. A.C.; 6 or 12 volt D.C.

Preliminary studies have indicated that inexpensive carbon and low-alloy steels may be practical for use in nuclear power plants, thus reducing their capital costs several million dollars, according to an investigation being conducted by GE for U. S. Steel. W. L. Pearl and G. G. Gaul, of GE's atomic power equipment department, San Jose, Calif., and D. C. Vreeland, of U. S. Steel's applied research laboratory, Monroeville, Pa., reported their findings in a paper presented by Vreeland last fortnight before the National Association of Corrosion Engineers at Dallas, Texas. Findings were based on the initial phase of the steel test program. Underway since August, 1958, the program covered the corrosion resistance of a wide variety of common steels, including structural carbon steel, high-strength, low-alloy steel, alloy steel and stainless steel. Specimens of the steels were exposed to corrosion under simulated operating conditions in a special out-of-pile boiling water test loop at GE's San Jose facilities. While preliminary results were "extremely promising", the report noted that many problems still exist and must be solved prior to any extensive use of carbon or low-alloy steel in boiling water reastors.

Irradiated polyethylene packaging film is now being produced by W. R. Grace's Cryovac division, Simpsonville, S.C. Over 1 million lbs. were test sold by Grace at 3¢ per 1,000 sq. in. for wrapping meat and poultry (close-shrunk to the item). This compares with cellophane at 2.7¢ to 3.3¢ and regular polyethylene at 2.7¢. Grace produces it as Cryovac Type L film using a 2-mev. GE electron-beam generator and irradiating linear polyethylene tape, which is then stretched biaxially. Features include tensile strength of 10,000 psi. and high clarity. Grace patents cover application of the process to both high and low-density polyethylene, polypropylene and various copolymers.

MANUFACTURERS' NEWS: Ormonoterapia Richter S.p.A. has been appointed exclusive representative in Switzerland for the biochemicals and radiochemicals produced by Schwarz Bio Research, Inc., Mount Vernon, N.Y. This agent has handled Schwarz product sales in Italy for the past 8 years.

MANUFACTURERS' LITERATURE: Automatic monitoring of gamma and beta radiation using model DZ14 radiation detection device is described in booklet offered by BJ Electroncs, Borg-Warner Corp., 3300 Newport Blvd., Santa Ana, Calif.....Radioisotope wall chart with information on dosimetry of radioisotopes, decay tables, etc., may be obtained free of charge from Baird-Atomic, Inc., 33 University Rd., Cambridge, Mass.

RESEARCH & DEVELOPMENT NEWS...

NATIONAL LABORATORIES' ROLE DESCRIBED: Expansion will occur at most of the USAEC'S research and development installations although some will curtail their activities, recent report of the USAEC on their role in the next ten years points out (p. 1 this LETTER). Substantial expansion is forecast for Brookhaven National Laboratory (staff now 1,800), and Lawrence Radiation Laboratory, Berkeley (staff now 2,200). Moderate staff increases will occur at Argonne National Laboratory, (now employing 3,600); Ames Laboratory (with 423); Lawrence Radiation Laboratory, Livermore (with 3,600); and at the Aircraft Nuclear Propulsion Facility, Hartford (with 1,600). Slow and limited growth is forecast for Las Alamos Scientific Laboratory (now employing 4,070) if weapons work continues and other anticipated projects develop. Several installations will remain at their present level: Oak Ridge National Laboratory (with 5,000 now employed); Aircraft Nuclear Propulsion Facility, Evandale (with staff of 2,930); Knoll Atomic Power Laboratory (staff now 2,180); Sandia Laboratory (with staff of 7,940), for some years, at least; Hanford Laboratory, (staff now 1,670); and Savannah River Laboratory (now employing 635). At Bettis Laboratory, Pittsburgh, which now has staff of 3,600 reduced from a high of nearly 5,000, somewhat less than 3,000 people will be its long-term employment level.

NEW BOOKS & OTHER PUBLICATIONS...

Potential Non-Nuclear Uses for Depleted Uranium. A study by Battelle Memorial Institute, Columbus, Ohio. (75¢).....Non-Nuclear Uses for Depleted Uranium. Report of investigations at Oak Ridge National Laboratory. ($2.25). These two reports, prepared independently, are an effort to stimulate more commercial use for depleted uranium of which the Commission has thousands of tons available. At present, industrial uses include applications in ceramics; in high density work, as for counter-weights; scattered chemical and electrical uses; and some modest use as a gamma radiation shield. Potential new markets covered by the reports include metallurgical applications in special alloys and high speed steels and for high density metals; chemical applications in catalysis and inorganic ion-exchange systems; for cathodic protection; and possibly for use in future fast breeder reactors. Metallurgical uses are reported as offering the best possibilities for development of sizable markets. The reports may be obtained from Office of Technical Services, Wash. 25, D.C.

Fallout from Nuclear Weapons Tests; Hearings Before Special Subcommittee on Radiation, 86th Congress, 1st Session. No. Y 4. At 7/2: F 19/3. (Vol. 2, $2.75; Vol. 3, $1.75).....Index to Hearings on Growth and State of Atomic Energy Industry Held February 17-26, 1959. No. Y4. At 7/2: At/7/12/959. (10¢).....Atomic Energy Act of 1946 and Amendments; August 1, 1946 -- September 23, 1959. 158 pages. No. Y 1.2: At 7 (45¢).....Superintendent of Documents, Wash. 25, D.C.

Low Temperature Nuclear Process Heat. Proceedings of the symposium held October 1, 1959 at USAEC's Germantown, Md., headquarters. No. TID-7580. -- Office of Technical Services, Wash. 25, D.C. (75¢)

Second report of the European Nuclear Energy Agency of the Organization for European Economic Cooperation has been published by the Council of Europe and covers an 18 month period during which three joint research projects sponsored by the Agency were set up and started functioning. (1) A study and research office is doing preliminary work on the plant and laboratories to be built in 1963 at Mol, Belgium, for Eurochemic. (2) Low power experiments relating to the Halden, Norway boiling heavy water reactor of the Norwegian Institute for Atomic Energy are being carried out. (3) The third is the Dragon project for the joint construction and operation of a high-temperature, gas-cooled reactor at Winfrith Health Establishment of the U. K. Atomic Energy Authority. (The report notes that by 1965 there should be 8,000 to 9,000 megawatts of installed nuclear capacity for all O.E.E.C. countries; this is an estimate revised to January 1, 1960. For the period 1960-1965 the average capital cost per kilowatt of installed electrical capacity is estimated by E.N.E.A. experts to be $350 for natural uranium stations and $315 for enriched uranium stations; these costs do not include fuel charges. For that period, the cost of generating electricity by nuclear power would be between 0.85 cent and 1.5 cents per kilowatt-hour which compares with the 0.7 and 0.8 cent per kilowatt-hour cost of conventionally generated electricity.)

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED March 15, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Method of and device for correcting the x-ray spectral sensitivity of photographic emulsions and products obtained therefrom. Andre Allisy, Paris, inventor. No. 2,928,946 assigned to G. Massiot & Cie, Courbevoie, France. (2) Laminar ray resistant materials. Herman I. Silversher, inventor. No. 2,928,948 assigned to inventor of record. (3) Ion generator. William W. Hicks, John C. Beckett, inventors. No. 2,928,942 assigned to Ionaire, Inc., San Francisco, Calif. (4) Neutron detector. Robert T. Bayard, Thomas J. Walker, inventors. No. 2,928,965 assigned to Westinghouse Electric Corp., E. Pittsburgh, Pa.

PATENTS ISSUED March 15, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Iron coated uranium and its production. Allan G. Gray, inventor. No. 2,928,168 assigned to USAEC. (2) Method for producing thorium tetrachloride. Edward A. Mason, Carolus M. Cobb, inventors. No. 2,928,721 assigned to USAEC. (3) Neutronic reactor construction and operation. Jordan T. Weills, John M. West, inventors. No. 2,928,779 assigned to USAEC. (4) Source of products of nuclear fission. Paul Harteck, Seymour Dondes, inventors. No. 2,928,780 assigned to USAEC. (5) Cooled neutronic reactor. Eugene P. Wigner, Edward C. Creutz, inventors. No. 2,928,781 assigned to USAEC. (6) Rotary switch. John P. E. Watterberg, inventor. No. 2,928,910 assigned to USAEC. (7) Arc discharge and method of producing same. Rodger V. Neidigh, inventor. No. 2,928,966 assigned to USAEC.

PATENTS ISSUED March 22, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Delta phase plutonium alloys. Eugene M. Cramer, Finley H. Ellinger, Cletis C. Land, inventors. No. 2,929,706 assigned to USAEC. (2) Method of fabricating a uranium-zirconium hydride reactor core. Ivan F. Weeks, Walter V. Goeddel, inventors. No. 2,929,707 assigned to USAEC. (3) Method for coating graphite with metallic carbides. Morris A. Steinberg, inventor. No. 2,929,741 assigned to USAEC. (4) Convection reactor. R. Philip Hammond, L.D.P. King, inventors. No. 2,929,767 assigned to USAEC. (5) Nuclear reactor core design. James E. Mahlmeister, William S. Peck, William V. Haberer, Ardell C. Williams, inventors. No. 2,929,768 assigned to USAEC. (6) Target assembly. Benjamin W. Ela, Jr., Frank J. Sterbentz, inventors. No. 2,929,933 assigned to USAEC. (7) Radiation measuring devices. Gerlacus M. B. Bouricius, Gordon K. Rusch, inventors. No. 2,929,932 assigned to USAEC. (8) Ion stabilized electron induction accelerator. David Finkelstein, inventor. No. 2,929,951 assigned to USAEC.

PATENTS ISSUED March 22, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Irradiated polyethylene and products therefrom. Kenneth N. Mathes, Harry I. Morgan, inventors. No. 2,929,744 assigned to General Electric Co., Schenectady, N.Y.

NOTES: Some 80 patented inventions, developed during the course of USAEC-sponsored research, and previously listed in this NEWSLETTER (patents issued during August and September, 1959) are now available for commercial use on a royalty-free (non-exclusive) basis. Information on this group, as well as on the 2,100 inventions previously made so available, may be obtained from Patent Counsel, USAEC, Wash. 25, D.C.

ATOMIC ENERGY BUSINESS NEWS...

SALE OF DIVISION BY FIRM IN NUCLEAR FIELD: Vitro Manufacturing Co. has been sold to Ferro Corp. for about $500,000. This completes the realignment and consolidation of Vitro Corp. of America, parent firm of Vitro Mfg., and seller in this transaction. As previously reported (this LETTER, p. 2, March 1, 1960) Vitro Corp. has been eliminating certain company operations. With the acquisition, Ferro will add Vitro Mfg.'s products -- glass and overglaze colors, glaze stain, and porcelain enamel oxides -- to its line of colors for porcelain enamel, clayware and plastics.

EXPANSION BY NUCLEAR FUEL FIRM: Mallinckrodt Nuclear Corp is adding 3,200 sq. ft. to its nuclear fuels research facility at its Hematite, Mo., plant and building a new nuclear fuel warehouse to replace the space taken over by its research and development activities. This is the firm's third expansion since the plant was built in 1956 and gives the company 40,000 sq. ft. devoted exclusively to commercial production of nuclear fuels.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

March 29, 1960